

Physical Computing Quiz

The following are questions you should be able to answer by the middle of the semester. Give yourself 1.023 points for questions where you did not need to consult a reference. Give yourself .255 points if you get it right after looking it up. 0 points if you can't find the answer. Scrawl your score on a minuscule piece of paper and hide in a crevice somewhere in the city.

Give a definition for physical interaction.

What is the ambition of every electron? Alternately, what is the tendency of electrical current? How do we turn that to our advantage?

What is the dreaded short circuit?

Explain the difference between an analog sensor and a digital sensor. Give examples of both.

Describe how you might make a homemade switch for sensing when someone is sitting in a chair.

Draw a circuit for a digital input to a microcontroller. What does the resistor (called a *pull-down resistor*) do?

What is the maximum resolution your Arduino can give for an analog input reading? How many bits of memory does this take up?

Do you get that full analog resolution from most sensors? What analog sensor is most likely to give you the full resolution?

How do you determine the range of values from any given sensor?

When should you care about the resolution of an analog input?

How big a number can fit in a byte? What about an int?

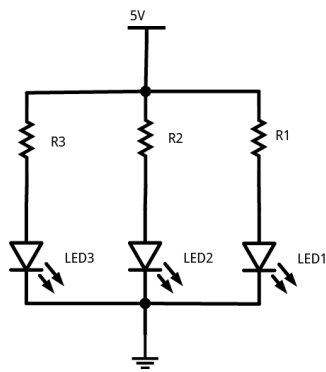
Your Arduino cannot output an analog voltage. How does it fake it for an LED or for a servomotor?
How does it fake it for sound?

How do you make the idiosyncratic values you get from a sensor work with for the values expected by a given output function in Arduino?

When absolutely nothing works on your breadboard, what is the most basic thing to check using a multimeter?

What does the serial monitor do?

Identify the components that are in series below, and those that are in parallel:



Write a program to read a digital input on an Arduino and print the result out to the serial monitor.

Write a program to read an analog input on an Arduino and map the result to a range from 0 to 255 to fade an LED.

Extra Credit: Write program to read an analog input and send it out the serial port once a second. Don't use the delay command.